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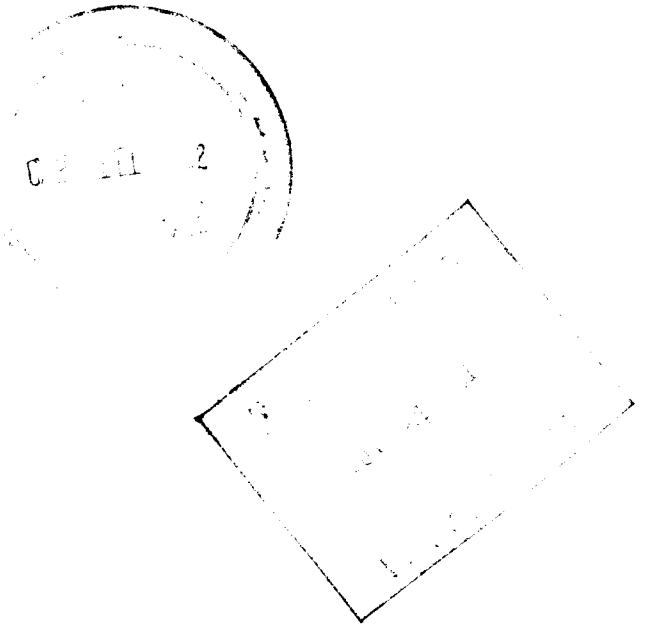
SUBJECT/ASUNTO: Exchange of Information

Enclosed please find a copy of a paper written by Fernando Monge, entitled Functional relationship between AGRINTER type territorial networks and specialized information analysis centers (SIACs). This paper was presented at the XII AGRINTER Round Table held in Santo Domingo, Dominican Republic, June 10-12, 1981.



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AGRINTER
PAPER
No. 1E

FUNCTIONAL RELATIONSHIP BETWEEN AGRINTER TYPE TERRITORIAL NETWORKS AND SPECIALIZED INFORMATION ANALYSIS CENTERS (SIACs)*

Fernando Monge**

I. INTRODUCTION

This is not a final document. Rather, it is a tentative work intended to stimulate discussion on the topic.

We intend, therefore, to present initially the background of problems related to the management of technical agricultural information, with special reference to Latin America, followed by an analysis of the characteristics of Territorial Networks and their relationship to Specialized Information Analysis Centers (SIACs). These latter ones have been described by various authors generally as independent entities. It is our opinion that these centers have an intrinsic relationship with territorial networks and that this interrelation can provide us with an adequate global scheme to organize harmonically the management of technical agricultural information in Latin America.

II. OUTLINE OF THE PROBLEM

A. Traditional Approach

As scientific agricultural research became institutionalized in Latin America, technical libraries were created to manage the pertinent information under a traditional library approach, that is, a more or less passive approach in which the librarian played a role comparable to that of a bookstore attendant rather than being a true administrator or manager of information for scientists.

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The library itself was principally a collection of books, organized according to very wide systems of classification, and the majority of services were limited to the use of materials in reading rooms.

The user, rather than being considered as the final objective of the process, was almost a disturbing factor which upset the order of the collection. In summary, the basic orientation of the traditional library approach was towards the collection itself and not necessarily toward its use.

B. Modern Approach : Factors for Change

Population growth, which strongly increases throughout the world in the last few decades, together with the institutionalization of scientific research as a tool for development, brings about a concomitant growth of the scientific professions to such extent that presently it is estimated 75% of the scientists who ever existed are alive today.

This large scientific population of the world (for reasons beyond the scope of this document) produces a large quantity of information which the more developed nations have come to call the "information explosion", and has given rise to slogans such as the famous "publish or perish" dominating the North American and European scientific communities.

In the face of scientific population growth and this information explosion, the electronic computer with its basic ability to handle large amounts of information at the speed of light, appears as the solution to the problem. However, although it is indeed true that the computer causes a major change in the handling of information, even more important than this technological change per se is the attitudinal change of people handling that information as well as the conceptualization of technical information as a fundamental pillar for scientific research activities.

The modern approach, therefore, is characterized by an orientation toward the user and toward the use of information, rather than by an excessive interest on the collection or body of knowledge itself.

C. The Latin American Situation : Transition

The management of technical agricultural information in Latin America is not an exception to other characteristics of the developing process.

Although there is a small percentage of Information Units using modern technology and characterized by an user orientation, we have to admit that the majority are traditionally oriented, frequently disguised by certain superficial features of a modern operation. In other words, we suffer from a high frequency of "false adoption" of modern technology.

The heart of the problem for the documentalist, however, continues to be the following:

1. Despite the fact that Latin American researchers produce a considerable amount of technical results, publication rates are still very low and the forms in which results are published (when they are indeed publisned) is the so-called non-conventional type, of very limited distribution. This complicates the work of the documentalist, who must collect "fugitive" material usually buried in scientists' desks or in their secretaries files.

2. The information explosion of the more developed nations presents a second problem for the documentalist:from this universe of documents he must select those which are specifically pertinent to the region.

3. Once the problem of collecting materials is overcome, the documentalist must offer specialized, rapid and efficient services, that indeed constitute a true support for the scientist and reach him at the right moment.

In the model we will describe below, these considerations are crystallized in the functional relationship that must exist between what we have called Territorial Networks and Specialized Information Analysis Centers (SIACs) - a relationship which would allow for a harmonic operation of the system.

III. A MODEL FOR THE ORGANIZATION OF AGRICULTURAL INFORMATION IN LATIN AMERICA

This is not a model in the strict scientific sense, but rather a convenient scheme to guide technical information activities in the agricultural sector of Latin America.

As stated above, there are two basic tasks, one which emphasizes collection mechanisms, and another one focusing on processing and analysis in order to offer a variety of services directly to the user. This appears to be a sensible division of labor.

The agencies carrying out these tasks, however, utilize the same typical process of technical information management, but with special characteristics to each of the four operations involved: collection of information, information processing, production of services and utilization of these products.

A. Territorial Networks

These networks are primarily mechanisms for the global collection of information. They have a primary inventory function; thus, they collect bibliographic references without emphasizing the collection of documents per se, which, obviously, would be an enormous task given the wide coverage of these networks. In most cases, the location of non-conventional documents is given in addition to bibliographic information.

The processing of information in the Territorial Networks is done by general categories, for example, scientific disciplines and, in some instances, commodities as well, but without going into specific descriptors. The classification used by Territorial Networks responds to the needs of the SIACs which, as will be seen later, carry out a much more specific processing of the literature that enables them to produce services, appropriate to the final users of the system. In other words, Territorial Networks carry out a general processing which could be called mediate processing, since the SIACs will complete the process and in an immediate manner will reach the final users.

Consequently, services within Territorial Networks should be designed with the SIACs in mind as their primary clientele. As an specific example, AGRINTER, as a territorial network, should be able to produce print-outs on cassava by general categories of scientific disciplines, such that the Cassava Information Center at CIAT in Cali, Colombia, could use them as practically the only source of information for all the literature produced on the topic in Latin America. Obviously, this implies the existence of a very efficient and rapid collection network to offer this service periodically and regularly.

The SIACs, not being based on the "territorial formula", generally have world coverage and thus, their task of collecting information would be greatly simplified by having to use only a few Territorial Networks instead of searching through innumerable reference sources, journals, abstracts, bibliographies, etc., where the information sought is dispersed and entangled in a web of bibliographic references.

This ideal situation, unfortunately, does not correspond to reality at a given moment. It suffices to say that at the presente, the number of SIACs which successfully operate in the region can be counted in one hand and that, given the urgency of the situation, Territorial Networks are forced to provide services directly to institutions as well as to individuals. This de facto situation does not invalidate the model itself since, as the importance of certain commodities is assessed and the corresponding SIACs are created, we will more closely be approaching the model which served as a guiding scheme to achieve this organization.

B. SIACs

While Territorial Networks respond to the convenience of using the existing political structure in the region to facilitate collecting all the information produced, the SIACs respond to the social organization of scientific specialties, agricultural commodities or specific problems, which manifest themselves as the so-called scientific communities and "invisible colleges" which are a sort of sub-communities formed around very specific problems or lines of research. (As a parenthesis, it is interesting to note how much the SIAC's through their emphasis on production

and use of services, contribute to the formation, maintenance and cohesion of scientific communities).

Information collection in a SIAC does not concentrate on references, a function which ideally is carried out by Territorial Networks, but rather on obtaining documents (originals, photocopies or microfiche): (1) to produce services based on the in-depth analysis of the document, and (2) to perform the highly important function of document delivery.

Thus, processing is characterized by an in-depth analysis of the information contained in the documents, the assignment of very specific subject matter categories through descriptors or keywords and the elaboration of abstracts which, in turn, serve as raw material for other services.

Qualitative selection of materials and editing of publications, are also included within the processing function of SIACs. This obviously, has important implications for the make-up of personnel needed by a SIAC. In other words, the documentalists should also be subject-matter specialists as well as technical editors.

If we look at SIACs "from their inside", their typical characteristics are mostly in their processing function. "From the outside", that is, from the user's point of view, the services provided are what makes them "different" and more appreciated.

The design of SIAC's services, therefore, should be suited to the behavior of its clientele and thus,follow as much as possible the various phases the researcher goes through when carrying out his research.

Schematically, the behavior of a scientist could be divided into three large phases:

1. One phase that might be called a receptive phase, in which the researcher maintain an open mind to perceive problems which might be worth investigating. To this phase of scientific activity, the SIAC typically responds with specialized current awareness services.

2. A phase of specific problems analyses which the researcher intends to investigate and for which he constructs conceptual models. SIAC's services in answer to this phase are analytical products, such as an abstracts service, to provide an idea of what has been done in a particular field or problem; they are a sort of launching platform for the construction of the conceptual model and the experimental design.

3. A synthesis phase, in which the scientist tries to generalize knowledge, on the basis of specific results. The SIAC responds to this phase through products of synthesis, such as state-of-the-art reports, which attempt to summarize and establish connections between research carried out in a given sub-area of scientific knowledge or with respect to an specific research problem. In other words, SIACs try to stimulate the formalization of a process which occurs spontaneously in the advancement of science, that is, the appearance of what we could call "great synthesizing minds" which derive generalizations from existing experimental evidence, also pointing to aspects which require more future research.

Below we are listing services which SIACs may offer, in answer to the behavioral phases mentioned above.

Current Awareness Services

Despite the fact that there is a considerable variety of current awareness services, perhaps one of the most interesting at presente, since it has had already a considerable impact in Latin America, is the Content Pages which we have described elsewhere.

Recently, however, a somewhat modified version has already shown possibilities of success at the country level in Colombia and at the international level in AIBDA. The so-called Collective Content Pages, are opened to the participation of several entities or countries that contribute their lists of technical journals to be included in the service. The publication itself is made on the basis of institutional specific interest profiles for each contributing entity. In this manner, the input of each institution is made on an individual basis, but the service is

based on the pooled list. Thus, the information service is enriched, but specificity for each user institution is maintained by collating their particular issue of Collective Contents Pages by specific interest profiles.*

Products of Analysis

Due to the circularity of scientific activity (as can be inferred from the afore-mentioned behavioral phases of scientists), the majority of these services actually may have more than one function. This is the case of abstracts published either in the form of cards or as frequent periodical bulletins, which serve as a current awareness means as well as surrogates of the article itself. These abstracts, as products of analysis are, in most cases, linked to the possibility of selective dissemination.

Another example of products of analysis are annotated bibliographies, directories of researchers, institutions, equipment suppliers, etc. We could also include in this category, specialized technical journals produced by some of the SIACs, and reprints (or translations) of specific articles which, due to their importance, deserve a more ample distribution thoroughout the specialized clientele of a SIAC.

Products of Synthesis

One of the products of synthesis, already mentioned before as an example, are state-of-the-art reports typically directed to scientific audiences.

A SIAC, however, can provide services not only to the scientific community per se, (primarily in charge of research) but also to other semi-technical audiences fulfilling a role in the process of transmitting this knowledge to other sectors of the population. Such is the case, for

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example, of programmed learning packages which give information on specific topics, for instance, pollinization techniques for bean breeding. This package may include a series of slides synchronized with an audiocassette, accompanied by a manual including self-administered tests for the student.

Also in this category we may have field manuals, profusely illustrated and with simplified texts to help diagnose plant diseases, pests and nutritional deficiences in certain crops. These "best sellers" are used by the researcher as well as by the extension worker and the farmer.

Question-and-answer services are a product of synthesis which make use of experts as part of a SIAC. These services respond to users who expect an answer not only in terms of bibliography, but even more so the alternative solutions that specialists can provide. This service may have two different modalities: (1) A SIAC, through its own personnel or through outside personnel on contract responds to the query, or (2) it supplies the names of experts in that specific problem, acting as a referral service.

Also for intermediate or semi-technical audiences, another product of synthesis are digests, a modified version of state-of-the-art reports in simplified language. The mission of these digests is to popularize science and technology for users who have neither the time nor a real need for all the technical details, although they have to have some information for decision-making, for example.

Informative bulletins, technical bulletins or newsletters are practically meaningless clisès to embody a great variety of small publications of various and sundry types. However, the importance of a well conceived newsletter within a SIAC cannot be overemphasized, especially if it is structured as a true product of synthesis, i.e. as a publication on technical news of importance which uses an attractive journalistic style, and gives information not only on the event itself, but also on the "who" and "where" of the news. In addition to its

informative function, a publication of this type has a cohesional effect on the scientific community, since its pages are open to those who care to contribute.

Finally, in addition to these examples of products of synthesis that SIACs may produce, there is a very important function which must not be overlooked. It is the role that a SIAC should fulfill by directly using other Territorial Networks and SIACs which might provide additional help. Providing this service is obviously much more appropriate than just a final paragraph in a letter to a user suggesting he should contact other sources of information.

Support Services

Carrying out the above-mentioned services, pre-supposes the existence of certain basic support services, such as reprography (tear-sheets, photocopies or microfiche); a system of coupons to facilitate payment of services, and other possible ideas to stimulate the use of SIACs' services, for instance, toll-free direct-dial telephone calls or perhaps on-line connections with computer systems.

C. Territorial Networks and SIACs : Functional Relationship

We have described the main characteristics of Territorial Networs and SIACs, as well as how, through a convenient division of labor, these two types of information services should channel their efforts toward certain specific operations.

With respect to Territorial Networks, efficiency and usefulness of services should not be sacrificed for the sake of geographic universality and, conversely, SIACs should not sacrifice total coverage of their specialized subject scope in order to cope with the production of services which are obviously quite demanding and elaborate to produce.

Through equally sharing the total task, each component of the system is able to fully complete its specific functions and the system as a whole gains in efficiency.

Projecting toward the future, Territorial Networks would also have the following functions: (1) to determine priority areas (crops, problems, etc.) that deserve the creation of new SIACs; (2) to choose institutions in which they should be located; (3) to provide organizational schemes, personnel, equipment requirements, etc.; (4) to channel financing proposals to appropriate financing agencies; (5) to provide some basic elements, such as specialized lists of references for the acquisition of documents, and, in general, to incorporate the new SIACs to the regional system for agricultural information, by training personnel and monitoring the system.